



City of Saco

DEPARTMENT OF CODE ENFORCEMENT

Complying with the Residential IECC 2006 Prescriptively

ZONE 6

See policies and ordinances for additional information.

All details are for EXAMPLE ONLY. Plans shall have details that are site specific to project.

Figure 1

Windows, Doors and Skylights

Fenestration U-factor windows and doors	Zone 6 .35
Fenestrations shall be listed on the window, door and skylight schedule.	
Skylight U-factor	Zone 6 .60
Glazed fenestration SHGC	Zone 6 N/A

Lower U-value is better

STICKER SHALL REMAIN ON WINDOWS, SKYLIGHTS, AND DOORS UNTIL INSPECTED AND APPROVED FOR THE ABOVE REQUIREMENTS.

 World's Best Window Co. Millennium 2000® Vinyl-Cast Wood Frame Double Glazing - Argon Fill - Low E Product Type: Vertical Slider	
ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./B-TU)	Solar Heat Gain Coefficient
0.35	0.32
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Air Leakage (U.S./B-TU)
0.51	0.2
Condensation Resistance	
51	
<small>Manufacturer requires that these ratings conform to applicable NFRC procedures for determining window product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>	

Figure 2

Ceilings

Zone 6 R-49

R-30 shall be deemed to satisfy the requirements for R-49 wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. (Figure a)

Markers shall be affixed to the trusses or joist and marked with the minimum initial installed thickness by one inch (1) high numbers. A minimum of one (1) marker shall be installed for every 300 square feet of area with numbers to face the attic access opening. **Details on plans required.**

MARKERS SHALL BE INSTALLED AT COMBO ROUGH-IN INSPECTION OR WALL INSULATION INSPECTION.

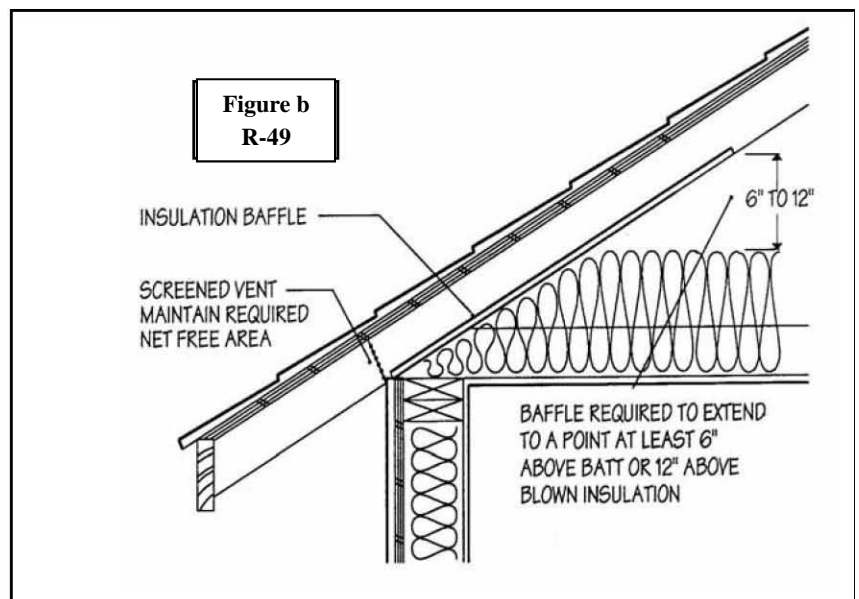
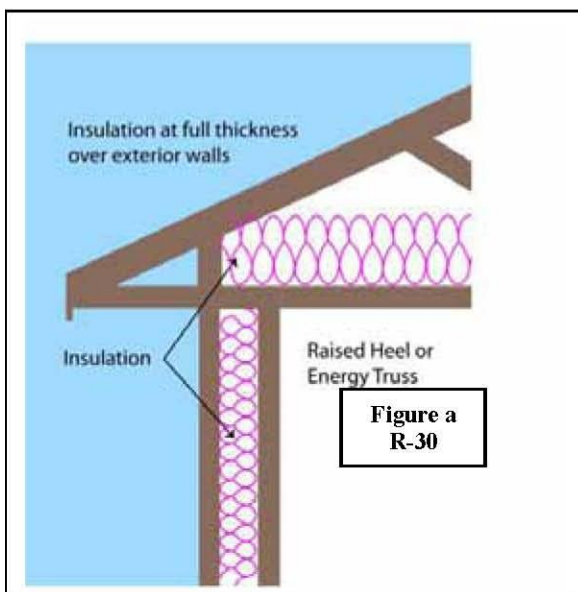
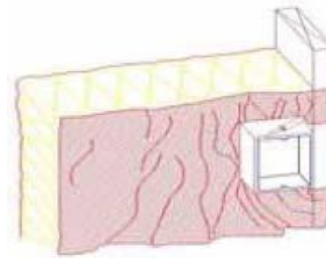


Figure 3

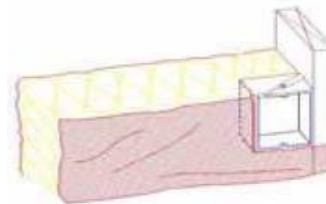
Wood Framed Walls

Zone 6 R-19

1. Insulation shall be in substantial contact with the surface being insulated to avoid air paths that bypass the insulation.
2. Insulation shall not be compressed by inset stapling of batt insulation or other means.
3. Insulation shall fill all cavities completely by cutting insulation around electrical outlets and switches, and by slicing insulation to fit behind and in front of electrical wiring in the cavity and plumbing piping.
4. Band joists and other interstitial floor elements of the wall shall be insulated. **Notes on plans required.**



WRONG
Insulation is
smashed behind the
junction box



CORRECT
Insulation carefully
cut to fit behind
junction box and
snugly at sides

Figure 4

Mass Walls

Zone 6 R-15

Mass walls shall be considered walls of concrete block, concrete, insulated concrete form (ICF), masonry cavity, brick (other than brick veneer), earth (adobe, compressed earth block, rammed earth) and solid timber/logs. Mass walls that have at least 50 percent of the required insulation R-value on the exterior of or integral to the wall shall meet mass wall R-value requirements. Walls that do not meet this criterion for insulation placement shall meet the wood frame wall insulation requirements of Section 402.1.1

Details are required to be on plans.

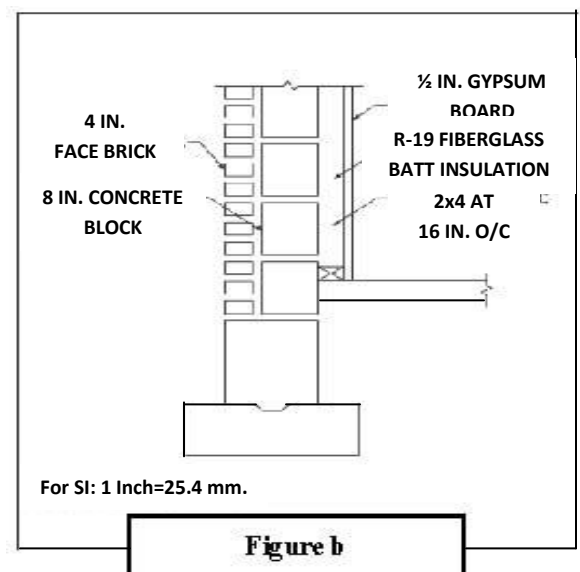
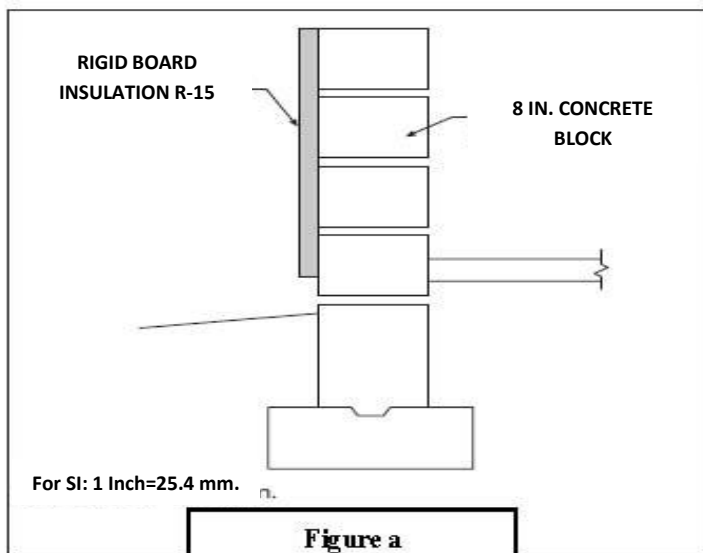


Figure 5

Floors

Zone 6 R-30

Insulation shall be in substantial contact with the surface being insulated to avoid air paths that bypass the insulation, installing supports maybe necessary to keep the insulation tight against the floor. **Notes on plans required.**

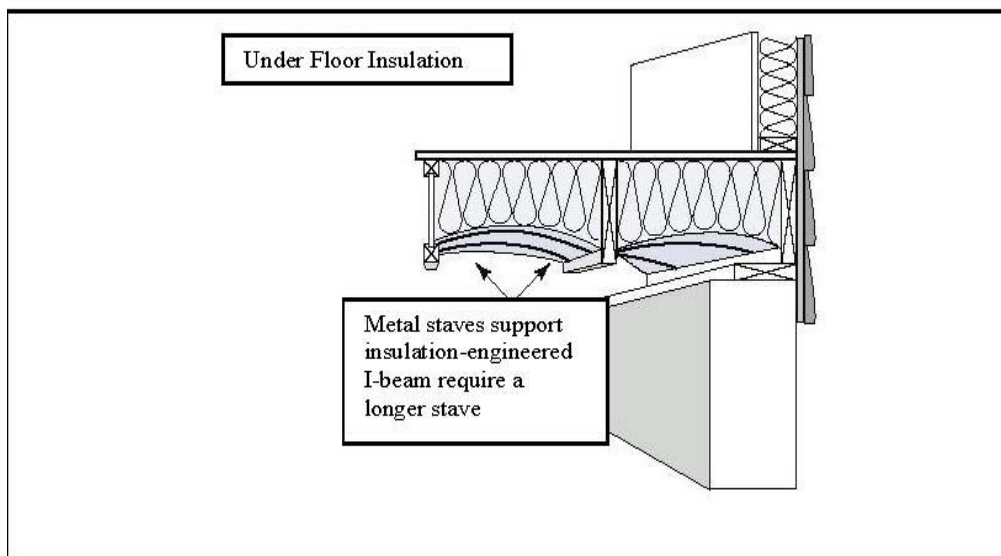
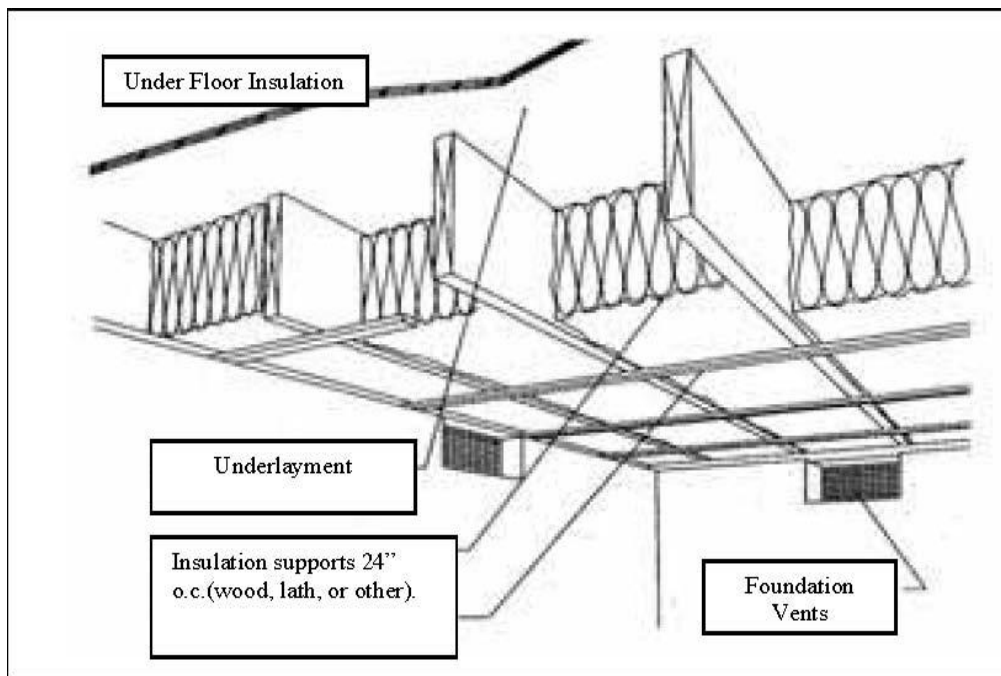


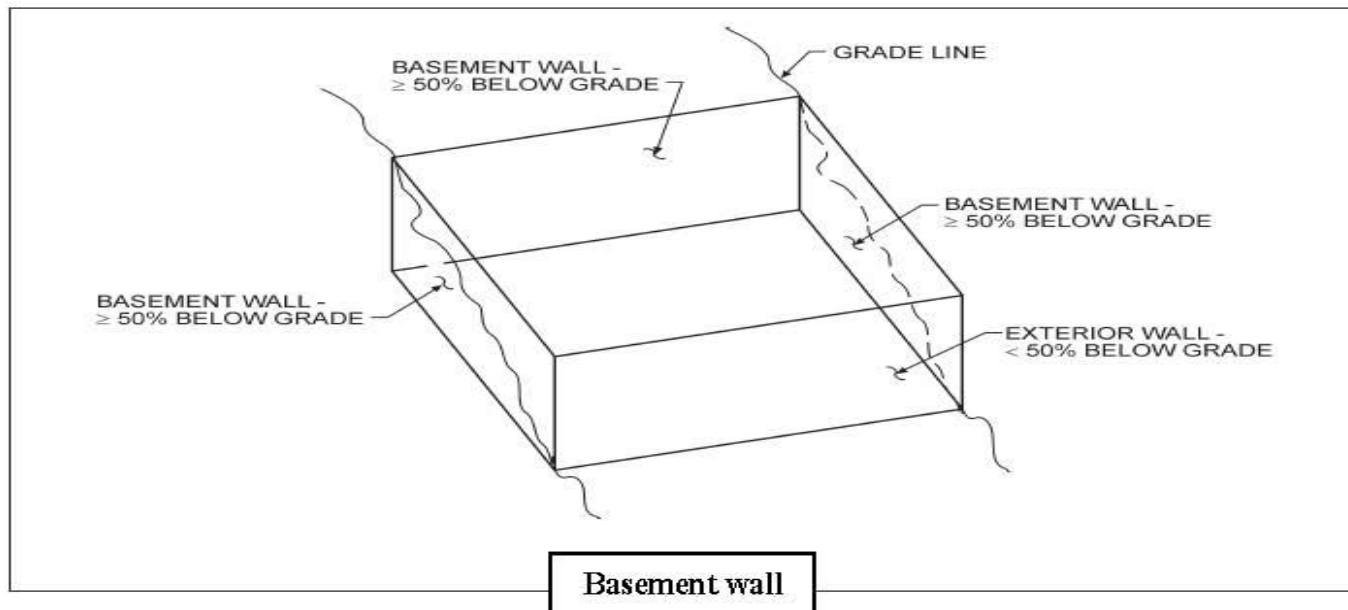
Figure 6

Basement Walls

Zone 6 R-10/13

Each wall of a basement must be considered separately to determine whether it is a basement wall or an exterior wall. A wall that is less than 50 percent below grade is an exterior wall and must meet the insulation requirements for walls.

Details are required to be on plans.



R-10 Continuous
Exterior Basement
Insulation

Figure 6
A and B



Figure 7

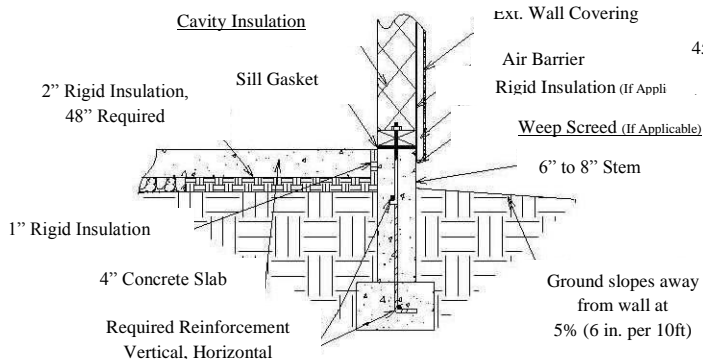
Slab

Zone 6 R-10 for 48"

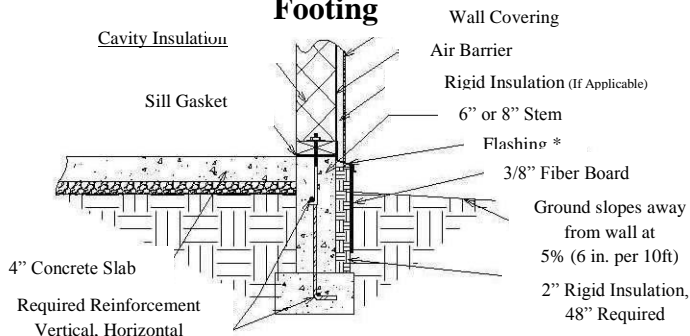
Most of the heat loss from a slab will occur in the edge that is exposed directly to the outside air. The insulation must be installed to the top of the slab edge to prevent this heat loss. There are several methods to achieve slab insulating;

A detail of which method will be used shall be on the foundation plan.

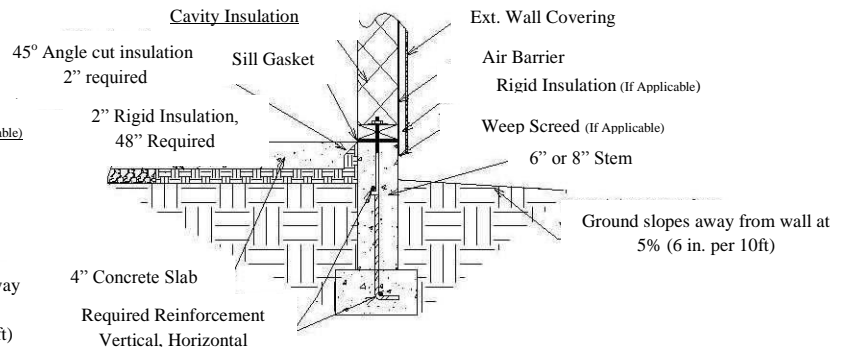
**Fig. A
6" or 8" Stem
Wall Footing**



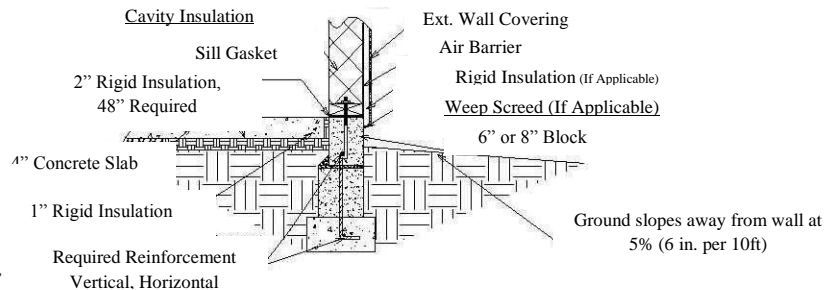
**Fig. C
6" or 8"
Stem Wall
Footing**



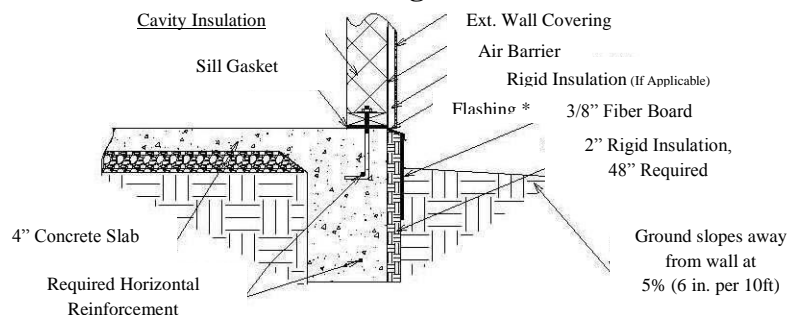
**Fig. B
6" or 8" Stem
Wall Footing**



**Fig. D
Block
Stem Wall
Footing**



**Fig. F
Mono Poured
Footing**



*Weep screed for stucco systems to be installed per Manufactures specification.

Figure 8

Crawlspace Wall

(Conditioned crawlspace)

Zone 6 R-10 continuous R-13 cavity filled insulation

Insulating the crawlspace is an alternative to insulating floors over crawlspaces.

1. Crawlspace wall insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and /or horizontally for at least an additional 24 inches.
2. A continuous vapor retarder shall be installed to the exposed earth.

Details are required to be on plans for the insulation and vapor retarder.

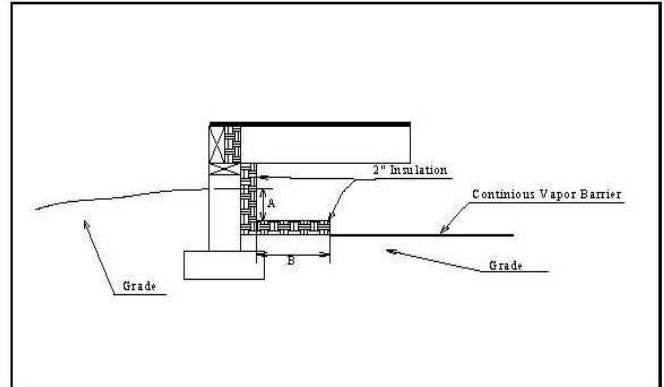


Figure 9

Air leakage

See Sealing Key Point List

The code allows the use of airflow retarders (house wraps) or other solid materials as acceptable methods to meet this requirement. To be effective, the building thermal envelope seal must be:

- Impermeable to air flow.
- Continuous over the entire building envelope.
- Able to withstand the forces that may act on it during and after construction.
- Durable over the expected lifetime of the building.
- All seams and edges must be sealed/taped per manufactures specifications. **Notes on plans are required.**

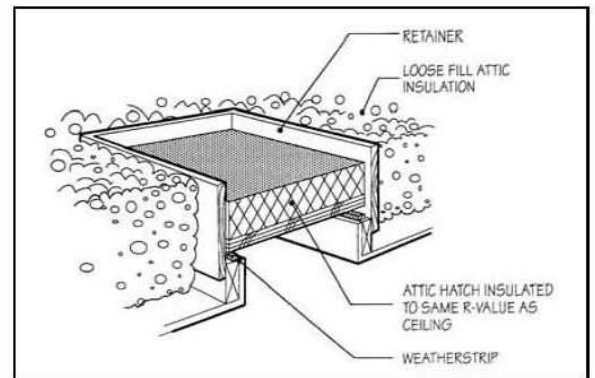
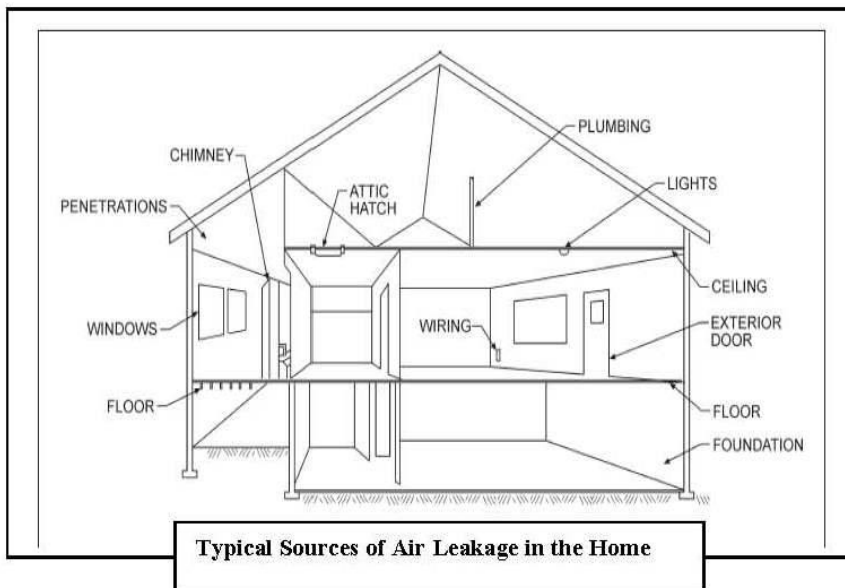


Figure 10

Building Thermal Envelope

(Sealing to limit infiltration - See Sealing Key Point List)

The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weather-stripped or otherwise sealed with an air barrier material, suitable film or solid material:

1. All joints, seams and penetrations.
2. Site-built windows, doors and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Dropped ceilings or chases adjacent to the thermal envelope.
6. Knee walls.
7. Walls and ceilings separating a garage from conditioned spaces.
8. Behind tubs and showers on exterior walls.
9. Common walls between dwelling units.
10. Other sources of infiltration. **Notes on plans are required.**

Figure 11

Fenestration Air Leakage

Window, skylight and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot, and swinging doors no more than 0.5 cfm. Specification shall be listed on the manufacturer label.

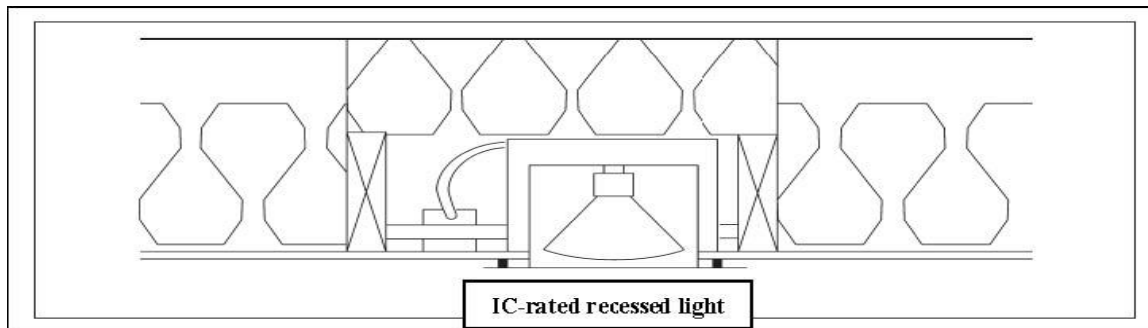
Notes on plans are required.

Figure 12

Recessed Lighting

Recessed luminaries installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces by being:

1. IC-rated and labeled with enclosures that are sealed or gasketed to prevent air leakage to the ceiling cavity or unconditioned space; or
2. IC-rated and labeled as meeting ASTM E 283; or



3. Located inside airtight sealed box with clearances of at least 0.5 inch from combustible material and 3 inches from insulation.

Notes on plans are required.

Note 13

Heat Pump Supplementary Heat

Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

Notes on plans are required.

Note 14

Controls

At least one thermostat shall be provided for each separate heating and cooling system. **Notes on plans are required.**

Figure 15

Duct Insulation

Supply and return ducts shall be insulated to a minimum of R-8 (except ducts that are completely inside the building thermal envelope). **Notes on plans are required.**

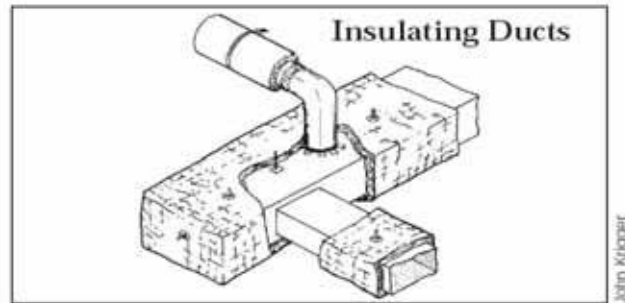


Figure 16

Sealing

All ducts, air handlers, filter boxes, and building cavities (not for supply air) used as ducts shall be sealed. Joints and seams shall comply with Section M1601.3.1 of the *International Residential Code*. **Notes on plans are required.**

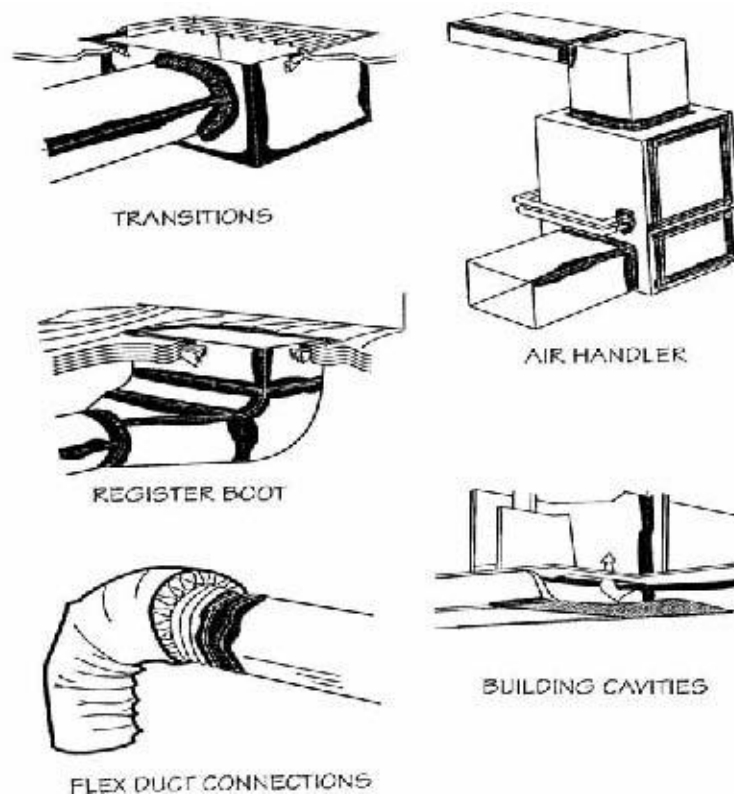


Figure 17

Mechanical System Piping Insulation

Mechanical system piping capable of carrying fluids above 105° F or below 55° F shall be insulated to a minimum of R-2.

Notes on plans are required.

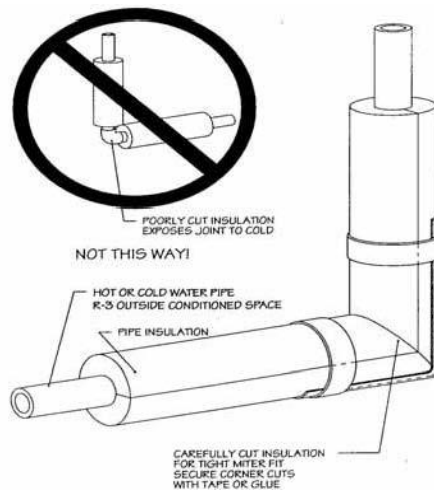
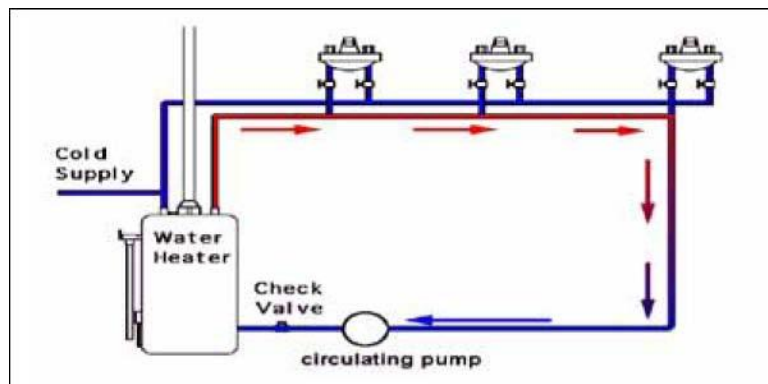


Figure 18

Circulating Hot Water Systems

All circulating service hot water piping shall be insulated to at least R-2. All new residences exceeding 1,200 square feet with two or more bathrooms shall have a circulating hot water system. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use. Thermal siphoning systems shall have a valve to reduce flow. **Alternate system shall be considered. Notes on plans are required.**



Note 19

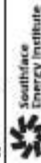
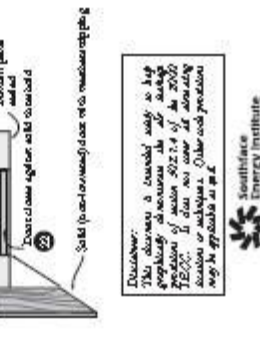
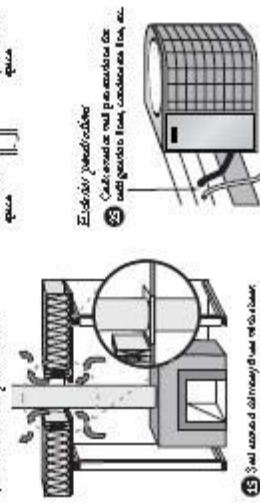
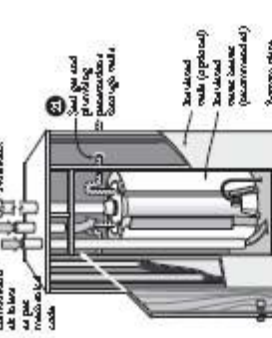
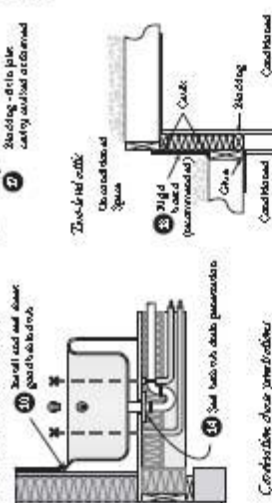
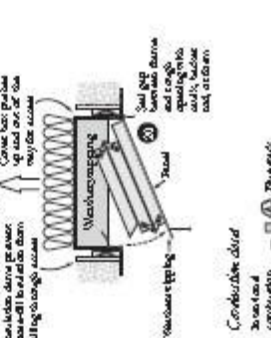
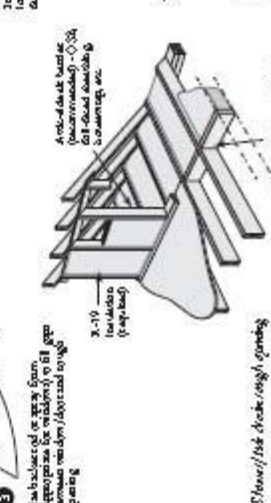
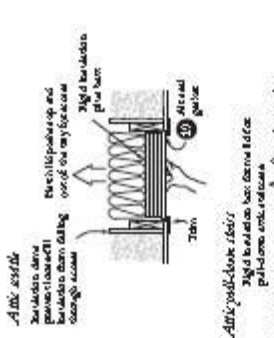
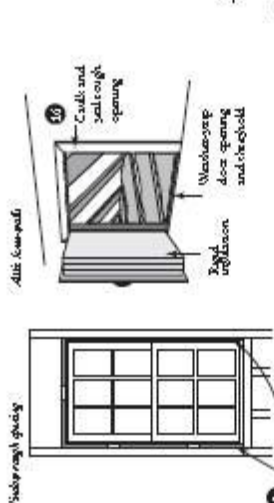
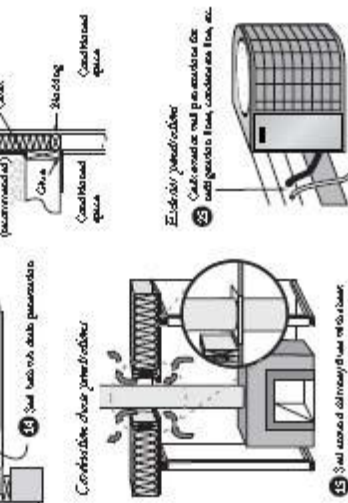
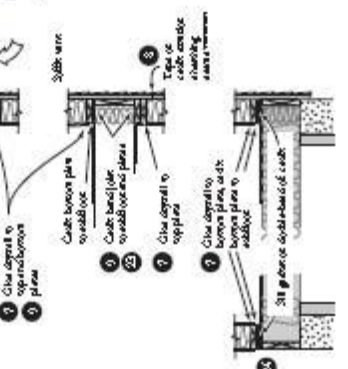
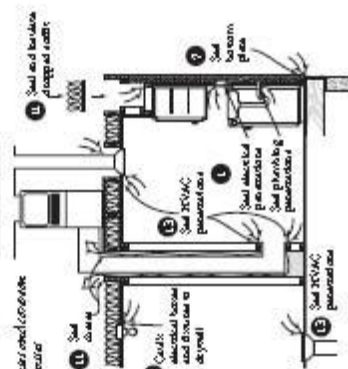
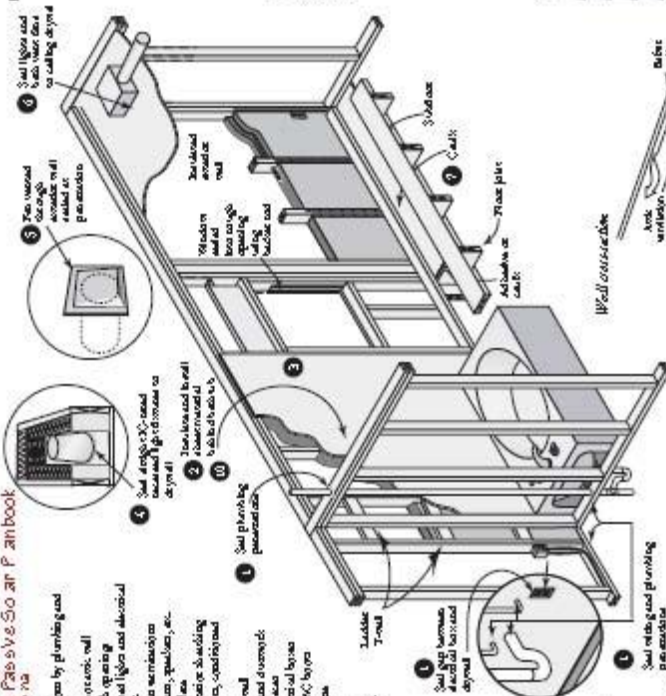
Mechanical Ventilation

Outdoor air intakes and exhausts shall have automatic or gravity damper that close when the ventilation system is not operating. **Notes on plans are required.**



Air Sealing Key Points from the Affordable Passive Solar Planbook for North Carolina

1. Floor and wall penetration by plumbing and electrical.
2. Tight door and window openings.
3. Attic, crawlspace and basement ventilation.
4. Attic, crawlspace and basement ventilation.
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23. Attic, crawlspace and basement ventilation.
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25. Attic, crawlspace and basement ventilation.



Southern
Energy Institute

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